INDUSTRIAL AUTOMATION

1	Course Title:	INDUSTRIAL AUTOMATION	
2	Course Code:	EEM4101	
3	Type of Course:	Optional	
4	Level of Course:	First Cycle	
5	Year of Study:	4	
6	Semester:	7	
7	ECTS Credits Allocated:	4.00	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:		
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Öğr.Gör.Dr. GÖKHAN YENİKAYA	
15	Course Lecturers:	Öğretmen BAYAZİT DİRİM	
16	Contact information of the Course Coordinator:	yenikaya@uludag.edu.tr	
17	Website:		
18	Objective of the Course:	Introducing the basic elements of industrial automation systems and teaching their usage, teaching PLC programming techniques and gaining the ability to write programs for possible scenarios that may occur in automation systems.	
19	Contribution of the Course to Professional Development:	To be able to follow innovations and apply them in the field by using the competence of research and analysis.	
20	Learning Outcomes:		
		1	To be able to apply theoretical and applied knowledge in modeling and solving engineering problems in the field of automation;
		2	To be able to identify, define and solve complex engineering problems encountered in the field of Industrial Automation by choosing appropriate analysis and modeling methods;
		3	To be able to design a complex process encountered in the field of Industrial Automation under realistic constraints and conditions by applying modern design methods;
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21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Components of the Industrial Automation system, Industrial signs and standards.	

2	Basic PLC architecture, PLC operation cycle, PLC selection, examination of S7-200 PLC basic features.	
3	Using Microwin program and running the program on PLC, debug operations.	
4	STL programming and stack usage-application examples.	
5	Input / Output commands and sequential control operations-application examples.	
6	Programming operations using timers-application examples.	
7	STL programming and stack usage-application examples.	
8	Course Repetition (Term project work is determined).	
9	Operations with Comparison Commands - application examples.	
10	Structured programming on PLC - application examples.	
11	Examination of interrupt operations, High speed counters and outputs - application examples.	
12	Asynchronous serial communication operations- Communication application on asynchronous motor speed control unit.	
13	SCADA systems	

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self-study and preparation	0	0.00	0.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	40.00	40.00
Others	0	0.00	0.00
Final Exams	1	40.00	40.00
Total Work Load			162.00
Total work load/ 30 hr			4.07
ECTS Credit of the Course			4.00

TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Midterm Exam	1	40.00
Quiz	0	0.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	2	100.00
Contribution of Term (Year) Learning Activities to		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00

Materials: Bilsen Yaylnevi. 2. Simatic S7-200 Programmable Controller System Manuel, Siemens.

Measurement and Evaluation Techniques Used in the Course	Measurement and evaluation are carried out according to the principles of Bursa Uludağ University Postgraduate Education Regulation.	
24	**ECTS / WORK LOAD TABLE**	

25	**CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS**															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ÖK3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications					
Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**